

**ABSTRACT**

A mode coupling device is provided for coupling co-propagating modes in an optical waveguide to provide a gain flattening filter for use with an optical amplifier such as an erbium-doped fiber amplifier. The mode coupling device includes a plurality of long period grating sections having equal spatial periods, with adjacent grating sections separated by an interval of less than 10 periods in length. Also provided is a method for manufacturing the mode coupling device, including a method for determining the parameters of the device and a method for fine tuning the device to provide a loss spectrum closely matching the output spectrum of the optical amplifier. The mode coupling device is useful for flattening the gain of the optical amplifier.